

466. *I have already said, respecting large and small electrodes, that change of order caused no change in the general effect (450).*

*The same was the case with different solutions, or with different intensities; and however the circumstances of an experiment might be varied, the results came forth exceedingly consistent, and proved that the electro-chemical action was still the same.*

467. *I consider the foregoing investigation as sufficient to prove the very extraordinary and important principle with respect to WATER, that when subjected, to the influence of the electric current, a quantity of it is decomposed exactly proportionate to the quantity of electricity which has passed, notwithstanding the thousand variations in the conditions and circumstances under which it may at the time be placed; and further, that when the interference of certain secondary effects (477, etc.), together with the solution or recombination of the gas and the evolution of air, are guarded against, the products of the decomposition may be collected with such accuracy, as to afford a very excellent and valuable measurer of the electricity concerned in their evolution.*

468. *The forms of instrument which I have given, figs. 24, 25, 26 (444, 445, 446), are probably those which will be found most useful, as they indicate the quantity of electricity by the largest volume of gases, and cause the least obstruction to the passage of the current. The fluid which my present experience leads me to prefer, is a solution of sulphuric acid of specific gravity about 1.336, or from that to 1.25; but it is very essential that there should be no organic substance, nor any vegetable acid, nor other body, which, by being liable to the action of the oxygen or hydrogen evolved at the electrodes (508, etc.), shall diminish their quantity, or add other gases to them.*

469. *In many cases when the instrument is used as a comparative standard, or even as a measurer, it may be desirable to collect the hydrogen only, as being less liable to absorption or disappearance in other ways than the oxygen; whilst at the same time its volume is so large as to render it a good and sensible indicator. In such cases the*

first and second form of apparatus have been used, figs. 22, 23 (442, 443). The indications obtained were very constant, the variations being much smaller than in those forms of apparatus collecting both gases; and they can also be procured when solutions are used in comparative experiments, which, yielding no oxygen or only secondary results of its action, can give no indications if the